

Application No. 10/632,043
Attorney Docket No. 13539US03

REMARKS

The examined application included claims 1-59. Claims 7-12 and 18-23 were rejected by Examiner. By this Amendment, claims 1-6, 13-17, 24-53, and 54-59 have been withdrawn, claims 7-12, 18-20, and 22-23 have been amended, and new claims 60-72 have been added.

Claims 7-12 and 18-23 were rejected under 35 U.S.C. §103(a) as being unpatentable over Barnes, U.S. Patent No. 2,395,091, in view of Rotter, U.S. Patent No. 4,306,506.

I. Election/Restrictions

This application is the subject of a restriction requirement pursuant to 35 U.S.C. § 121. Specifically, Examiner has identified four distinct species of the invention, namely: Species Group I (claims 1-6 and 13-17); Species Group II (claims 7-12 and 18-23); Species Group III (claims 24-53); and Species Group IV (claims 54-59). Pursuant to a March 25, 2004 telephone conversation between Examiner and Applicant's representative, Applicant has elected to prosecute the invention of Group II, claims 7-12 and 18-23. Applicant requests that the claims from Species I, III, and IV be withdrawn from further consideration without prejudice to Applicant's right to file the non-elected claims in divisional applications.

Application No. 10/632,043
Attorney Docket No. 13539US03

II. Information Disclosure Statement

Examiner has notified Applicant that Foreign references DT 2432504, DE 239165, DE 4030743, and EP 0173628, as cited by Applicant in Applicant's Information Disclosure Statement, do not comply with 37 CFR 1.98(a)(3) because of the failure to provide a concise explanation of relevancy of these non-English references.

Applicant has resubmitted these references in a supplemental Information Disclosure Statement that includes a statement of relevance as understood by the individuals most knowledgeable about the contents of these references.

III. Objection To Drawing Under 37 C.F.R. 1.83(a)

Examiner has objected to the drawings under 37 CFR 1.83, alleging that the drawings fail to show every feature of the invention specified in the claims. In particular, Examiner recited that the feature:

the interior chamber includes at least one inclined surface, the at least one inclined surface having a first portion and a second portion, the first portion being operably connected to the plurality of sidewalls, the at least one inclined surface having an inward inclination from the first portion toward the second portion, the second portion being operably connected to at least one of the at least one disposal opening

must either be shown in the drawings or cancelled from the claims.

Applicant respectfully submits that the claimed feature is illustrated in drawing

Figure 3E. Figure 3E is described in paragraph 0045 of the pending application as follows:

FIG. 3E shows an exterior perspective view of one embodiment of the interior chamber and an inclined waste disposal configuration of the gasification reactor chamber for use with the present invention.

Application No. 10/632,043
Attorney Docket No. 13539US03

Paragraph 0045. Furthermore, this feature, as illustrated in Figure 3E, was described in Paragraph 0095, which has been modified by this Response via the inclusion of omitted reference numbers for clarification purposes to recite:

In one embodiment, the interior chamber 126 may include at least one inclined surface 132, the at least one inclined surface 132 having a first portion 250 and a second portion 251, the first portion 250 being operably connected to the bottom portion 128 of the plurality of sidewalls of the interior chamber 126, and tapers inwards toward the longitudinal axis of the interior chamber 126. The second portion 251 is operably positioned in proximity to the disposal opening 119.

(underlining indicating the inclusion of previously omitted reference numbers).

Therefore, Applicant respectfully disagrees with Examiner's assertion that the claimed feature was not illustrated in the drawings. However, to further improve the clarity of the disclosure, Applicant proposes that additional reference numbers be added to the above-identified description and Figure 3E to more distinctly identify the claimed feature. Accordingly, Applicant submits with this Response a proposed corrected drawing of Figure 3E with the additional inclusion of previously omitted reference numbers for the interior chamber (126), the first and second portions (250, 251) of the inclined surface, and the bottom portion (128) of the plurality of sidewalls.

IV. 35 U.S.C. §103(a) Rejection

Applicant now turns to the rejection of claims 7-12 and 18-23 under 35 U.S.C. § 103(a) as being unpatentable over Barnes in view of Rotter.

Application No. 10/632,043
Attorney Docket No. 13539US03

A. Barnes Does Not Disclose A Reactor Chamber Configured To Receive A Plurality Of Feed Stock Material

Examiner has asserted that "Barnes discloses an interior chamber, the interior chamber having a top, bottom, and a plurality of sidewalls, the interior chamber configured to receive and gasify a plurality of feed stock material (26, 27. fig. 1)." Applicant respectfully disagrees with Examiner's assertion.

Barnes discloses a furnace structure that provides hot combusted gases for the indirect heating of fluids that flow within a bank of tubes 5 inside a reactor 3. (Col. 1; lns. 1-6). An air-fuel mixture is combusted within the furnace 10 so as to produce hot combusted gases. (Col. 3; lns. 7-16). The hot combusted gases are then commingled with recirculated combusted gases, which have been removed from the reactor, to form hot convective gases. (Id.). The hot convective gases are subsequently passed through an inlet duct 11 and into the reactor 3. (Col. 2; lns. 41-47). Once within the reactor 3, the hot convective gases pass about the bank of tubes 5, thereby providing indirect heat to fluid reactants within said tubes 5. (Col. 2; lns. 47-55). Conversion of the reactants within the tubes 5 is catalytically promoted via the presence of a catalyst within the tubes 5. (Col. 2; lns. 37-40).

Barnes does not disclose a reactor chamber configured to receive and gasify a plurality of feed stock material. Barnes teaches a furnace, not a gasifier. The structure in Barnes relied upon by Examiner is a combustion area in a furnace wherein air and fuel are provided to a burner for combustion, and from which the freshly combusted gases are subsequently commingled with cooler re-circulated convective gases before entering into

Application No. 10/632,043
Attorney Docket No. 13539US03

an inlet duct 11 and passing on to a reactor 5. Within these combustion zones 26, 27, incoming air and some re-circulated gases are supplied to the burners 30 and firing ports 31, (Col. 3, lns 50-55; col. 4, lns. 8-10). These combustion zones are not configured to receive or gasify a plurality of feed stock material.

Applicant respectfully submits that Barnes does not disclose a reactor chamber that is configured to receive and gasify a plurality of feed stock material, as required by independent claims 7 and 18 of Applicant's invention and new independent claim 60. Consequently, Applicant respectfully submits that independent claims 7, 18, and 60 and their respective dependent claims 10-12, 19-23, 61-72 are allowable.

B. Barnes Does Not Disclose An Apparatus For The Gasification Of Solid Waste Materials

Barnes discloses a furnace apparatus for the heating and reheating of convective gases used to provide heat for indirectly heating fluids. (Col. 1; lns, 1- 17). Under Barnes, reactant fluids flow inside a bank of tubes 5 in a parallel manner from top to bottom manifolds 6, 7. (Col. 2, lns. 23-37). Hot combusted gases are pass along the outer surfaces of said bank of tubes 5 so as to allow the heat entrained within said hot combusted gases to be indirectly transferred to the reactants and catalyst within said tubes, thereby supplying the required heat for the desired catalytic reaction. (Col. 1; lns. 11-18; Col. 2, lns. 47-55).

Barnes does not disclose an apparatus in which process gas flows directly around solid reactant materials or into areas containing solid reactant materials. In fact, Barnes

Application No. 10/632,043
Attorney Docket No. 13539US03

teaches away from an important aspect of the gasification procedure, namely the direct exposure of feed stock materials to gasification process gas.

Therefore, Applicant respectfully submits that Barnes does not disclose an apparatus, and more specifically, a reactor chamber, that is configured to gasify a plurality of feed stock material, as required by independent claims 7 and 18 and new independent claim 60. Consequently, Applicant respectfully submits that independent claims 7, 18, 60, and their respective dependent claims and 8-12, 19-23, and 61-72 are allowable.

C. Barnes Does Not Disclose A Perforated Liner Configured For Exposing Adjacent Received Feed Stock Material To Gasification Process Gas

Examiner has cited Barnes for the following:

at least one perforated conduit, at least a portion of the perforated conduit being configured to transport a gasification process gas to the plurality of feed stock material (24, 25, fig. 1)

* * * * *
the at least one perforated conduit is an inner lining (24, 25, fig. 1)

* * * * *
the interior chamber includes a liner, the liner being configured to permit the transport of a gasification process gas to at least a portion of the feed stock material (24, 25, fig. 1)

Barnes discloses refractory walls 24, 25 that have a plurality of openings 32, as illustrated in Figure 1. (Col. 3, lns. 38-44). These plurality of openings 32, which are located in the upper portion of the refractory walls 24, 25, allow re-circulated process gas to flow into an upper region in the furnace, whereupon the re-circulated gases may mix

Application No. 10/632,043
Attorney Docket No. 13539US03

with the freshly generated hot combustion gases. The commingled gases then flow through an inlet duct and into the reactor.

Applicant respectfully submits that the perforated conduit in Barnes referenced by Examiner are openings in the furnace, not the reactor, which allow "the cooler combustion gases from zone 28 [to] pass to commingle with the freshly generated hot combustion gases." (Col. 4; lns. 11-17). Thus, the openings cited by Examiner are used to reheat re-circulated combusted gases and are not used to transport gasification process gases to the plurality of feed stock material.

Barnes does not disclose an perforated liner that allows for the flow of process gas to adjacent solid waste materials for the gasification for said solid waste materials. Furthermore, Barnes does not disclose an apparatus in which process gas flows through a liner so that the exposure of at least portion of the adjacent sides, top, and bottom of loaded solid waste material may be directly exposed to gasification process gas and thus increase the size of the primary reaction zone.

Independent claim 7 has been modified to include the feature that the gasification reactor chamber include a perforated liner that is spaced inwardly from the plurality of reactor chamber sidewalls, with the reactor chamber being configured to receive a plurality of feedstock material. Independent claim 18 has been modified to include the feature that the gasification reactor chamber include a perforated liner that is operably positioned within the reactor chamber adjacent to the plurality of feed stock material.

Application No. 10/632,043
Attorney Docket No. 13539US03

Therefore, Applicant submits that amended independent claims 7 and 18 and their respective dependent claims 8-12, 19-23, and 69-70, and 71-72 are allowable.

Applicant also submits that new independent claim 60 includes the feature that at least a portion of the at least one perforated liner is configured to restrain at least a portion of the plurality of feed stock material away from at least a portion of the plurality of sidewalls. Therefore, Applicant submits that new independent claim 60 and its dependent claims 61-68 are also allowable.

D. Applicant Has Disclosed The Benefit Of Using At Least Five Sidewalls

Examiner has noted that neither Barnes nor Rotter disclose an invention having an interior chamber comprised of at least five sidewalls or is a cylinder. As a preliminary note, Applicant has amended claims 9 and 22 to recite the feature that the plurality of sidewalls of a reactor chamber from a column rather than a cylinder. Examiner has asserted that:

at the time the invention was made, it would have been an obvious matter of design choice to a person of ordinary skill in the art to have a cylinder or five sidewalls because Applicant has not disclosed that the number of sidewalls or shape provides an advantage, is used for a particular purpose, or solves a stated problem. One of ordinary skill in the art, furthermore, would have expected Applicant's invention to perform equally well with either the number of sidewalls and shape of Barnes or the claimed sidewalls and shape because both quantities of sidewalls and shapes perform the same function of processing material equally well.

Applicant respectfully disagrees with Examiner's assertion that Applicant has not disclosed that the number of sidewalls or that the configuration provides an advantage, is

Application No. 10/632,043
Attorney Docket No. 13539US03

used for a particular purpose, or solves a stated problem. For instance, Applicant has stated in its disclosure a fundamental problem with using the four wall rectangular configuration of the prior art, namely:

The limited feed stock capacity of prior art gasification systems often required the construction of multiple gasification reactor chambers to meet demand requirements. In previous designs, gasification reactor chambers typically have a rectangular configuration. As the length of the rectangular sidewalls is increased to satisfy larger feed stock capacity requirements, the size of the gasification reactor chamber creates problems associated with providing sufficient clearance space away from the prolonged high temperatures of the gasification reactor chamber. This problem typically limits gasification reactor chambers to configurations that are approximately 20 feet high, 20 feet wide, and 20 feet long. Such a configuration however has a limited load capacity of approximately 50 tons of feed stock material. Furthermore, as the size of the rectangular configuration is increased, problems develop with the side load waste dump arrangement. More specifically, as the rectangular sidewalls extend beyond 20 feet, the angle of repose of the trash spilling out of the garbage truck typically only fills a small portion of the gasification reactor chamber's near sidewall.

Paragraph 0012. In comparison, the size benefit of using at least a five wall configuration was illustrated by the following:

While the interior chamber 126 of the present invention is capable of having a rectangular, square, or cylindrical configuration, the preferred embodiment of the present invention has at least five side walls, such as an octagonal or hexagonal shape, and is a continuously welded container of 1/2 inch thick, 304 or 316 stainless steel plate or cast iron. In one embodiment of the invention, the gasification reactor chamber 101 is an octagonal reactor chamber that is designed to hold approximately 50 tons of feed stock material, and will be approximately 24 feet tall and 8 feet wide on the sides.

Paragraph 0085. Therefore, as illustrated, a rectangular system designed to hold approximately 50 tons of feed stock material was described as requiring a chamber having a configuration of approximately 20 feet high, 20 feet wide, and 20 feet long, and

Application No. 10/632,043
Attorney Docket No. 13539US03

may suffer from problems associated with the angle of repose from trash being dumped out of a garbage truck. (Paragraph 0012). However, an octagonal chamber that is designed to hold the same volume of feed stock material was described in Applicants specification as being approximately 24 feet tall and 8 feet wide on the sides. (Paragraph 0085).

Further example of Applicant setting forth the benefit of using at least a five wall chamber configuration or a column configuration in comparison to the rectangular configuration of the prior art was exemplified by the following:

The use of perforated conduits 75 also allows the gasification reactor chamber 101 to have a column configuration that includes at least five sidewalls. This column configuration and perforated conduits 75 configuration eliminates the 50 ton capacity limitation of prior art gasification reactor chambers. Furthermore, feed stock material may be top loaded into the column configuration, which may be achieved through the use of a conveyor, and thereby may eliminate repose fill problems associated with side loading a rectangular gasification reactor chamber configuration.

Paragraph 0097.

Therefore, Applicant respectfully disagrees with Examiner's assertion that Applicant did not disclose the number of sidewalls provides an advantage, is used for a particular purpose, or solves a stated problem.

Examiner also asserted that one of ordinary skill in the art would have expected Applicant's invention to perform equally well with either the number of sidewalls and shape of Rekant or the claimed sidewalls and shape because both quantities of sidewalls and shapes perform the same function of processing material equally well. Applicant

Application No. 10/632,043
Attorney Docket No. 13539US03

respectfully disagrees. For instance, Applicant noted that, as illustrated in Figure 5A, the perforated conduit 75 is preferably positioned in proximity to the intersection of the gasification reactor chamber 101 walls, extends outwards towards the center of the interior chamber 126, and provides passageways for the flow of gasification process gas to travel. (Paragraph 0096). The plurality of perforations 76 in these conduits 75 are configured to allow for the exposure of additional feed stock surface area to gasification process gas so as to increase the total surface area of the primary reaction zone, with the remaining exposed surface area adding to the total surface area of the secondary reaction zone. (Id.). Therefore, the presence of additional sidewalls creates additional intersections where perforated conduits 75 may be placed, and thus further increases the size of the primary reaction zone when compared to the rectangular reactor chambers of the prior art. (See Id.).

Applicant therefore submits that Applicant has stated the problems associated with prior art reactors having rectangular configurations, and how those problems may be overcome by a reactor chamber having at least five sidewalls. Therefore, Applicant submits that a reactor chamber having at least five sidewalls or a column configuration would not have been obvious to one of skill in the art, was not an obvious matter of design choice, and may provide a performance advantage, namely, when combined with the perforated liner of the present invention, an increased primary reaction zone. Applicant therefore respectfully asks that Examiner lift his objections to dependent claims 8, 9, 21, and 22.

Application No. 10/632,043
Attorney Docket No. 13539US03

Because of the manner in which Examiner's statements are worded, Examiner's position could be interpreted as Examiner asserting Official Notice of the subject of the statements. If Examiner is asserting Official Notice that the subject of the statements are common knowledge, Applicant respectfully traverses Examiner's assertions as further set forth below. Alternatively, if Examiner's assertions are based on the personal knowledge of Examiner, then under MPEP § 2144.03(C) and 37 C.F.R. § 1.104(d)(2), Examiner's assertions must be supported by an affidavit from Examiner.

According to MPEP § 2144.03(A), Official Notice, without supporting references, should only be asserted when the subjects asserted to be common knowledge are "capable of instant and unquestionable demonstration as being well-known." That is, the subjects asserted must be of "notorious character" under MPEP § 2144.03(A). However, Applicant respectfully submits that the subject matter of Examiner's assertion of Official Notice is not well-known in the art as evidenced by the searched and cited prior art.

None of the prior art taught or suggested the subject matter of Examiner's assertion of Official Notice. That is, Examiner's thorough and detailed search of the prior art has failed to yield any mention of the teachings that Examiner is asserting as widely known in the art. Applicant respectfully submits that if the subject matter of Examiner's assertion of Official Notice had been of "notorious character" and "capable of instant and unquestionable demonstration as being well-known" under MPEP § 2144.03(A), then the subject matter would have appeared to Examiner during Examiner's thorough and detailed search of the prior art. Consequently, Applicant respectfully

Application No. 10/632,043
Attorney Docket No. 13539US03

submits that the prior art does not teach the subject matter of Examiner's assertion of
Official Notice and respectfully traverses Examiner's assertion of Official Notice.

Application No. 10/632,043
Attorney Docket No. 13539US03

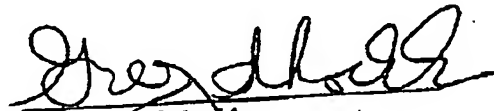
CONCLUSION

A Notice of Allowance is requested. If Examiner has any questions or Applicant can be of any assistance, Examiner is invited and encouraged to contact Applicant at the number below.

The Commissioner is authorized to charge any necessary fees or credit any overpayment to the Deposit Account of McAndrews, Held & Malloy, Account No. 13-0017.

Respectfully submitted,

Date: June 29, 2004


Gregory C. Schodde
Registration No. 36,668

MCANDREWS, HELD & MALLOY, LTD.
500 West Madison Street, 34th Floor
Chicago, IL 60661

Telephone: (312) 775-8000
Facsimile: (312) 775-8100